SQL Murder Mystery

Tags	coding sql
Author	Sai Charan
Created time	@December 29, 2022 12:19 PM
Last edited time	@December 29, 2022 12:55 PM
Status	Completed
link	https://mystery.knightlab.com/#experienced

Table of Contents

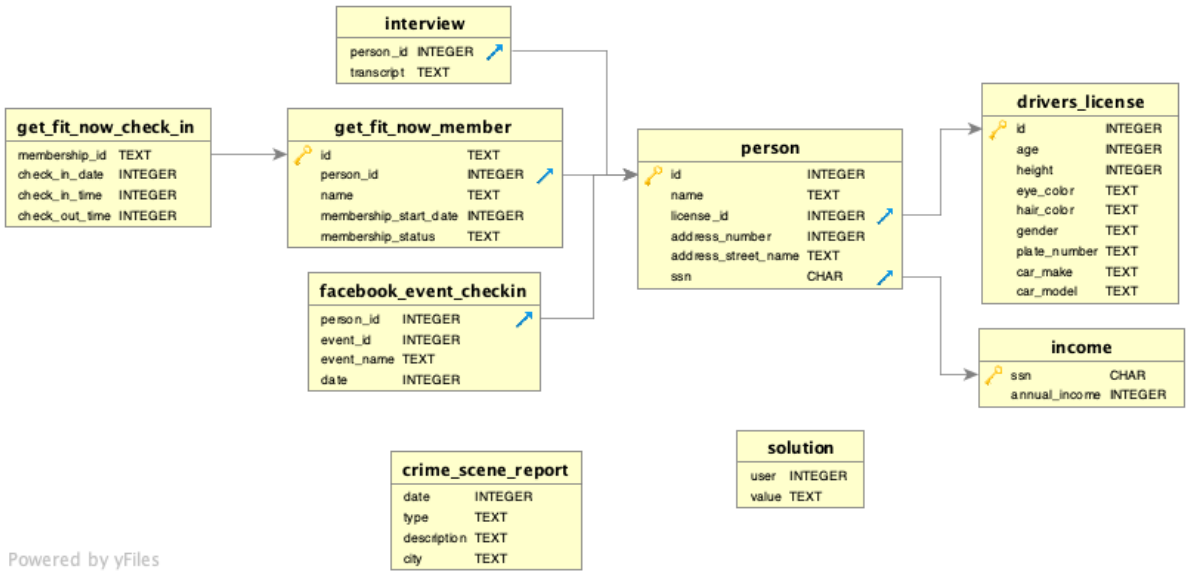
Overview

A crime has taken place and the detective needs your help. The detective gave you the crime scene report, but you somehow lost it. You vaguely remember that the crime was a **murder** that occurred sometime on **Jan.15, 2018** and that it took place in **SQL City**. Start by retrieving the corresponding crime scene report from the police department's database.

> *Although not the most effective approach, this is clearly a better place to begin.'*

The schema diagram

This is the schema diagram of the entire table, their attributes and relations.



---

1 The Crime Scene report

▼ From the description given let's retrieve the crime scene report.

```
# To view all the table
names SELECT name
FROM sqlite_master
where type = 'table'

# To view the structure of
tables SELECT sql
FROM sqlite_master
where name = 'crime_scene_report'

# retrieve the crime scene report - murder on 15 Jan 2018 in SQL
City select * from crime_scene_report
where city = 'SQL City' and date = 20180115 and type = 'murder'
```

We found the below record:

> Security footage shows that there were 2 witnesses. The first witness lives at the last house on "Northwestern Dr". The second witness, named Annabel, lives somewhere on "Franklin Ave".

- Output :

date	type	description	city
20180115	murder	Security footage shows that there were 2 witnesses. The first witness lives at the last house on "Northwestern Dr". The second witness, named Annabel, lives somewhere on "Franklin Ave".	SQL City

2 Finding Witnesses

▼From the description we try to get the details of the 2 witnesses

- For the first witness, using the description above
- Witness 1 information

```
# Last house on Northwestern Dr
select * , max(address_number) as 'Last_House'
from person P
where address_street_name = 'Northwestern Dr'
```

id	name	license_id	address_number	address_street_name	ssn	Last_House
14887	Morty Schapiro	118009	4919	Northwestern Dr	111564949	4919

- Witness 2 information

```
# For the second
witness select *
from person P
where address_street_name = 'Franklin
Ave' and name like '%Annabel%'
```

id	name	license_id	address_number	address_street_name	ssn
16371	Annabel Miller	490173	103	Franklin Ave	318771143

2.1 Interview transcripts of the witnesses

▼ Now let’s retrieve their interview transcripts

```
# Selecting the transcripts using the person_ids
above select *
from interview
where person_id in (14887, 16371)
```

person_id	transcript
14887	I heard a gunshot and then saw a man run out. He had a "Get Fit Now Gym" bag. The membership number on the bag started with "48Z". Only gold members have those bags. The man got into a car with a plate that included "H42W".
16371	I saw the murder happen, and I recognized the killer from my gym when I was working out last week on January the 9th.

2.2 Clues related to the ‘Murderer’

▼ From the above transcripts we get the following clues

- Gender is Male

- “Get Fit Now Gym" bag
- Gold Member - Membership number starts with ‘48Z’
- Car plate included ‘H42W’
- Last seen in gym on January 9th 2018

3 Finding the Murderer

3.1 Approach - 1

- Selecting the male persons with the mentioned car number plate

```
select *
from drivers_license
where gender = 'male' and plate_number like '%H42W%'
```

id	age	height	eye_color	hair_color	gender	plate_number	car_make	car_model
423327	30	70	brown	brown	male	0H42W2	Chevrolet	Spark LS
664760	21	71	black	black	male	4H42WR	Nissan	Altima

Now we got 2 suspects with ids 423327 and 664760.

- Now let’s check the membership table for these two persons.

```
select *
from get_fit_now_member
where person_id in (423327, 664760)
```

No data returned

> And we find no records of these two in the membership table. So we do not find any evidences related to the murderer. Let’s try a different approach.

3.2 Approach - 2

- Let’s check for the membership status and the number provided

```
select *
from get_fit_now_member
where id like '48Z%' and membership_status = 'gold'
```

id	person_id	name	membership_start_date	membership_status
48Z7A	28819	Joe Germuska	20160305	gold
48Z55	67318	Jeremy Bowers	20160101	gold

> We find 2 records with person ids 28819 and 67318 who are gold members with the id pattern as mentioned by one of the witnesses.

- Let’s check if these two came to the gym on 9th January.

```
select *
from get_fit_now_check_in
where membership_id in ('48Z7A', '48Z55')
```

membership_id	check_in_date	check_in_time	check_out_time
48Z7A	20180109	1600	1730
48Z55	20180109	1530	1700

> Now we can see both the people have checked in on that day. So one of these two persons can be a potential murderer.

- Let’s confirm their gender once

```
select D.id, P.id, D.gender, D.plate_number,
from drivers_license D, person P
where P.license_id = D.id and
P.id in (28819 , 67318)
```

id	id	gender	plate_number
423327	67318	male	0H42W2

> We find only one record that matches. Interestingly the plate number also matches with the number which one of the witnesses had reported .

- Let’s check his SSN for income

```
select I.ssn, annual_income
from income I, person P
where P.ssn = I.ssn and
P.id = 67318
```

id	ssn	annual_income
67318	871539279	10500

> We see that the income is 10500 annually. Not a potential clue but an additional information.

3.2.1 Additional confirmation related to the murderer

- Checking Facebook events attended

```
select *
from facebook_event_checkin
where person_id = 67318
```

person_id	event_id	event_name	date
67318	4719	The Funky Grooves Tour	20180115
67318	1143	SQL Symphony Concert	20171206

> Looks like he has attended a Facebook event on the day of murder

- Let’s also check who else has attended the event on that day

```
select P.name, P.address_number,
P.address_street_name from person P,
facebook_event_checkin F where P.id = F.person_id
and event_id = 4719
and date = 20180115
```

name	address_number	address_street_name
Morty Schapiro	4919	Northwestern Dr
Annabel Miller	103	Franklin Ave
Jeremy Bowers	530	Washington Pl, Apt 3A

> Looks like the other two are our witnesses of the murder.

> *So we can conclude that **Jeremy Bowers** could be the possible murderer.*

4 Conclusion

- Let’s check whether our solution is correct.

```
INSERT INTO solution VALUES (1, 'Jeremy Bowers');

        SELECT value FROM solution;
```

value
Congrats, you found the murderer! But wait, there's more... If you think you're up for a challenge, try querying the interview transcript of the murderer to find the real villain behind this crime. If you feel especially confident in your SQL skills, try to complete this final step with no more than 2 queries. Use this same INSERT statement with your new suspect to check your answer.

> Yay! We finally solved the mystery. Let’s take up the challenge and find the main person behind this.

5 Challenge question

- Let’s check the interview transcript of the murderer.

```
select P.id, P.name, I.transcript
from person P, interview I
where P.id = I.person_id
and P.name = 'Jeremy Bowers'
```

> I was hired by a woman with a lot of money. I don't know her name but I know she's around 5'5" (65") or 5'7" (67"). She has red hair and she drives a Tesla Model S. I know that she attended the SQL Symphony Concert 3 times in December 2017.

id	name	transcript
67318	Jeremy Bowers	I was hired by a woman with a lot of money. I don't know her name but I know she's around 5'5" (65") or 5'7" (67"). She has red hair and she drives a Tesla Model S. I know that she attended the SQL Symphony Concert 3 times in December 2017.

- Clues that we find from the above transcript
  - Gender - Woman
  - Height - between 65 and 67
  - Hair color - Red
  - Car - Tesla model S
  - Event ‘SQL Symphony Concert’ 3 times attended in Dec 2017
- Finding the main villain with the transcript details in just one query (as part of the challenge).

```
select P.id, P.name, D.gender, D.height, D.hair_color as hair, F.event_name,
count(event_id) as Times, D.car_model as car, D.car_make as make
from facebook_event_checkin F, person P, drivers_license
D where F.person_id = P.id and P.license_id = D.id
and D.gender = 'female' and upper(D.hair_color) =
'RED' and D.car_make = 'Tesla' and D.car_model like
'%S%' and D.height between 65 and 67
and F.event_name like '%SQL Symphony%'
and date between 20170112 and 20173112
group by person_id
having Times = 3
```

id	name	gender	height	hair	event_name	Times	car	make
99716	Miranda Priestly	female	66	red	SQL Symphony Concert	3	Model S	Tesla

> *We find that the main villain is ‘**Miranda Priestly**’.*

- Let’s check whether our solution is correct.

```
INSERT INTO solution VALUES (1, 'Miranda Priestly');

        SELECT value FROM solution;
```

value
Congrats, you found the brains behind the murder! Everyone in SQL City hails you as the greatest SQL detective of all time. Time to break out the champagne!

> ***Hurray! We solved the complete mystery.***